

**Claims:**

1. An apparatus (for the application of bone cement) having a housing which comprises a cylinder [for the reception of the bone cement] and having a piston arranged in a longitudinally displaceable manner in the cylinder by which the bone cement can be pressed out through an exit aperture formed in the cylinder, a screw movement for longitudinally displacing the piston in the cylinder for the application of the bone cement under high pressure, and an arrangement for switching between the displacement of the piston by the screw movement and a direct displacement in the longitudinal direction without a screw movement.

2. An apparatus in accordance with claim 1, wherein the piston comprises an engaging section having a screw thread that engages into a cooperating toothed arrangement provided at the housing such that the longitudinal displacement of the piston is effected when the engaging section is turned.

3. An apparatus in accordance with claim 2, wherein the cooperating toothed arrangement is formed as a rack.

4. An apparatus in accordance with claim 2, wherein the screw thread and the cooperating toothed arrangement can be uncoupled.

5. An apparatus in accordance with claim 4, characterized in that the cooperating toothed arrangement can be moved in a direction substantially perpendicular to the direction of displacement of the piston for the uncoupling.

6. An apparatus in accordance with claim 2, wherein the cooperating toothed arrangement is pressed against the screw thread under bias.

7. An apparatus in accordance with claim 2, wherein the cooperating toothed arrangement grips around the screw thread regionally.

09865109 - 052404

8. An apparatus in accordance with claim 7, wherein the cooperating toothed arrangement grips around the screw thread regionally free of undercutting.

9. An apparatus in accordance with claim 4, wherein the piston can be longitudinally displaced in a substantially free manner in the cylinder when uncoupled.

10. An apparatus in accordance with claim 2, wherein tooth flanks of the cooperating toothed arrangement and/or flanks of the thread section of the screw thread, which contact one another during the application of the bone cement form under pressure, form an angle of less than or equal to approximately  $90^\circ$  with the longitudinal axis of the engaging section which extends parallel to the direction of displacement.

11. An apparatus in accordance with claim 2, wherein the other tooth flanks of the cooperating toothed arrangement and/or the other flank of the thread section of the screw thread form an angle of more than approximately  $90^\circ$  with the longitudinal axis of the engaging section which extends parallel to the direction of displacement.

12. An apparatus in accordance with claim 2, wherein the piston and the engaging section are formed as one piece.

13. An apparatus in accordance with claim 2, wherein the piston and the engaging section are formed as separate parts which are connected to one another and which are in particular rotatable with respect to one another.

14. An apparatus in accordance with claim 1, wherein the cylinder comprises a circular cylinder.

15. An apparatus in accordance with claim 1, wherein a cannula can be fastened to the exit aperture of the cylinder.

0985109-052401

16. An apparatus in accordance with claim 15 comprising a cannula according to claim 17.

17. A cannula for an apparatus for the application of bone cement having an aperture formed at a distal end and a coupling section provided at a proximal end for the coupling to the application apparatus, wherein the distal end of the cannula is formed asymmetrically with a tip disposed to the side of the longitudinal axis; and handling elements projecting outwardly to the side are provided at the proximal end of the cannula with which the cannula can both be rotated around a longitudinal axis thereof and displaced along a longitudinal direction.

18. A cannula in accordance with claim 17 for an application apparatus in accordance with claim 1.

19. A cannula in accordance with claim 17, wherein an edge of the cannula end forming the border of the aperture is ground as a cutting edge.

20. A cannula in accordance with claim 17, wherein a passage area of the aperture extends obliquely to the longitudinal axis of the cannula.

21. A cannula in accordance with claim 17, wherein two handling elements are provided which are arranged with respect to the longitudinal axis of the cannula, in particular opposite thereto.

22. A cannula in accordance with claim 17, the handling elements are formed as pin-like elements projecting radially outwardly.

23. A cannula in accordance with claim 17, wherein a mandrin can be inserted into the cannula; and a connecting element is provided in the region of the proximal end of the cannula, to generate a connection between the mandrin and the cannula which is releasable, rotationally fixed and/or

09865109-052401

displaceably fixed in the axial direction.

24. A cannula in accordance with claim 23, wherein the connecting element is provided at a coupling section of the cannula.

25. A cannula in accordance with claim 23, wherein a counter element cooperating with the connecting element is provided at the mandrin.

26. A cannula in accordance with claim 25, wherein the counter element is provided in a region of the proximal end of the mandrin.

27. A cannula in accordance with claim 23, wherein the connection between the mandrin and the cannula comprises a bayonet fastening.

28. A cannula in accordance with claim 23, wherein the connecting element is formed as a slot-like recess, in particular as a groove or breakthrough, and the counter element is formed in particular as a pin-like lug or vice versa.

29. A cannula in accordance with claim 28, wherein the recess comprises at least one longitudinal section extending in the axial direction of the cannula.

30. A cannula in accordance with claim 29, wherein a cross-section of the recess extending in a peripheral direction of the cannula connects to the longitudinal section.

09865109-052401  
04250 60759860